

WHAT IS CLAIMED IS:

1. An isolated polynucleotide selected from the group consisting of:
 - (a) an isolated polynucleotide encoding a ubiquitin conjugating enzyme homologue comprising the amino acid sequence as set forth in SEQ ID NO:2, or a fragment thereof;
 - (b) an isolated polynucleotide comprising SEQ ID NO:1;
 - (c) an isolated polynucleotide, or fragment thereof, encoding a ubiquitin conjugating enzyme amino acid sequence having at least 80% sequence identity with the sequence of SEQ ID NO:2;
 - (d) an isolated polynucleotide having the nucleic acid sequence of ATCC Accession No. PTA-3745;
 - (e) an isolated polynucleotide having the nucleic acid sequence according to nucleotides 517 to 1782 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start codon;
 - (f) an isolated polynucleotide having the nucleic acid sequence according to nucleotides 520 to 1782 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the start codon;
 - (g) an isolated polynucleotide which is fully complementary to the polynucleotide according to (a) through (f).
2. A hybridization probe comprising the polynucleotide according to claim 1.
3. A composition comprising the isolated polynucleotide according to claim 1.
4. An expression vector containing the polynucleotide according to claim 1.

5. A host cell containing the expression vector according to claim 4.

6. A substantially purified ubiquitin conjugating (UBC) enzyme polypeptide selected from the group consisting of:

(a) a ubiquitin conjugating enzyme polypeptide having the amino acid sequence as set forth in SEQ ID NO:2;

(b) a ubiquitin conjugating enzyme polypeptide comprising an amino acid sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:2;

(c) a polypeptide according to (a), wherein the amino acid sequence differs from SEQ ID NO:2 only by conservative substitutions;

(d) a polypeptide according to (a), wherein the amino acid sequence has at least 90% sequence identity to the sequence set forth in SEQ ID NO:2;

(e) an isolated ubiquitin conjugating enzyme polypeptide encoded by the nucleic acid sequence of ATCC Accession No. PTA-3745;

(f) an isolated polypeptide having the amino acid sequence according to amino acids 2 to 422 of SEQ ID NO:2, wherein said amino acid encode a polypeptide of SEQ ID NO:2 minus the start methionine;

(g) an isolated polypeptide having the amino acid sequence according to amino acids 1 to 422 of SEQ ID NO:2, wherein said amino acid encode a polypeptide of SEQ ID NO:2 including the start methionine;

(h) an isolated polypeptide having the transmembrane domain region set forth in SEQ ID NO:17; and

(i) a substantially purified fragment of the ubiquitin conjugating enzyme polypeptide according to any one of (a) to (h).

7. A substantially purified ubiquitin conjugating enzyme fusion protein comprising an amino acid sequence having at least 80% sequence identity to the sequence as set forth in SEQ ID NO:2 and an amino acid sequence of an Fc portion of a human immunoglobulin protein.

8. A pharmaceutical composition comprising the polypeptide according to claim 6, or a functional portion thereof, and a pharmaceutically acceptable diluent, carrier, or excipient.

9. A pharmaceutical composition comprising the fusion protein according to claim 7, and a pharmaceutically acceptable diluent, carrier, or excipient.

10. A purified antibody which binds specifically to the polypeptide according to claim 6, or an antigenic epitope thereof.

11. A method of screening for candidate compounds capable of binding to and/or modulating activity of a ubiquitin conjugating enzyme, comprising:

- (a) contacting a test compound with a substantially or partially purified polypeptide according to claim 6; and
- (b) selecting as candidate compounds those test compounds that bind to and/or modulate activity of the polypeptide.

12. The method according to claim 11, wherein the candidate compounds are small molecules, therapeutics, biological agents, or drugs.

13. A method of treating a cancer or tumor, comprising administering an antagonist or inhibitor of the ubiquitin conjugating enzyme polypeptide according to claim 6 in an amount effective to block ubiquitination of a tumor suppressor gene in cancer or tumor cells.

14. A method of suppressing the immune response in a subject requiring said suppression, comprising administering a modulator of the ubiquitin conjugating enzyme polypeptide according to claim 6 in an amount effective to cause immunosuppression.

15. A method of treating an immune or neuronal disorder in a mammal comprising administering the ubiquitin conjugating enzyme polypeptide according to claim 6 in an amount effective to treat the immune or neuronal disorder.

16. A method of treating a cancer or tumor, an immune disorder, a lymphoproliferative disorder, or a neurodegenerative disorder, comprising: administering to an individual in need of treatment or therapy an antagonist or inhibitor of the ubiquitin conjugating enzyme polypeptide according to claim 6 in an amount effective to treat the disorder by blocking ubiquitination of a tumor suppressor gene in a cancer or tumor cell, a lymphoid cell, or a cell of the nervous system.

17. A method of treating cancers or tumors, immune disorders, lymphoproliferative disorders, or neurodegenerative disorders, comprising: administering to an individual in need of treatment or therapy an agonist of the ubiquitin conjugating enzyme polypeptide according to claim 6 in an amount effective to treat the disorder.

18. A kit for hybridization comprising the isolated polynucleotide according to claim 1, and instructions for use.